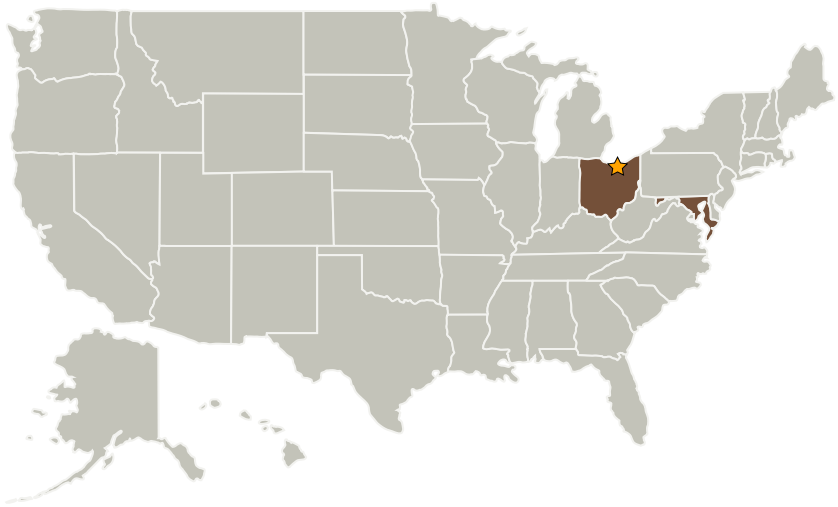
Aircraft Electrical Power System Diagnostics and Health Management, Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

The objective of the project is the development of an open architecture, computational toolbox for design and implementation of diagnostic and prognostic algorithms for aircraft electrical power systems. The management of typical failure modes of the electrical system can have substantial returns in the overall availability, safety and operating cost of aircraft. We propose several innovative techniques for monitoring specific components of the power system such as generators, converters, and batteries. The integrated architecture using general purpose symbolic processing, numerical tools and data logging makes this project especially attractive and will bring advances in diagnostics and prognostics to engineering practice. The toolbox will include code generation tools resulting in the ability to seamlessly integrate the designed algorithms by automating several key steps for the implementation phase. In Phase I we will demonstrate the approach using experimental test beds. The successful completion of this phase of the project will provide not only a prototype health monitoring system but establish a framework to integrate new algorithms allowing the rapid packaging of advanced health management techniques for validation and verification, flight certification and final system integration and evaluation.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Techno-Sciences, Inc.	Supporting Organization	Industry	Beltsville, Maryland

Primary U.S. Work Locations	
Maryland	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.5 Fault Diagnosis and Prognosis